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TECHNICAL NOTES

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JUNEAU, ALASKA

Preliminary Cubic Form Class Volume Tables for White Spruce in Alaska

The cubic volumes of 68 measured white spruce trees in the vicinity of Fairbanks were consistently 4% higher than those of Southeast Alaska cubic foot tables for Sitka spruce. To provide volume tables for use in the Interior until such time as new ones can be constructed from a greater number of measured trees, the Southeast Alaska cubic volume tables for Sitka spruce were raised 4%. These tables are presented by 1-inch diameter classes and half-logs to a maximum diameter of 24 inches. The 68 measured trees checked these tables with an aggregate error of 0.3% and a standard error of 6.2%.

The cubic foot tables presented here are for volumes to a 6-inch top. To obtain volumes to a 4-inch top, estimate number of logs as before to a 6-inch top, then add:

2 cu. ft. for 9" to 12" dbh
1.5 " " " 13" to 17" dbh
1.0 " " " 18" dbh and larger

For trees from 5 to 8 inches dbh use the following table:

DBH	Total Height of Tree - Feet					
	30	40	50	60	70	80
Cu. Vol. to 4" top I.B.						
5	1.4	1.8	2.2			
6		3.0	3.7	4.5		
7			5.3	6.5	7.4	
8			7.0	8.4	9.8	11.3

The board foot form class tables issued by Mason, Bruce and Girard for Pacific Northwest conifers were applied to these 68 trees but the Alaska trees were 18% to 20% too low in volume. More field measurements of larger trees are needed to construct board foot tables, or to make more adequate checks.

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Forester in Charge

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(over)

Tree diameter (inches)	Gross cubic foot volume, inside bark								
	Number of 16-foot logs to 6-inch top								
	1	1½	2	2½	3	3½	4	4½	5
9	7	8	9						
10	8	9	10	12	14	15.5	17	20	23
11	9	10.5	12	14	16	18	20	22.7	25.5
12	10	12	14	16	18	20.5	23	25.5	28
13	12	14	16	18.2	20.5	23	25.5	28.5	31.5
14	14	16	18	20.5	23	25.5	28	31.5	35
15	15.5	17.7	20	22.5	25	28	31	35	39
16	17	19.5	22	24.5	27	30.5	34	38.5	43
17	19.5	21	22.5	26.5	30.5	34.5	38.5	42.7	47
18	22	24.5	27	30.5	34	38.5	43	47	51
19	24.5	27.5	30.5	34.2	38	41.7	47.5	51.5	55.5
20	27	30.5	34	38	42	47	52	56	60
21			38.5	42.7	47	51.7	56.5	61.5	66.5
22			43	47.5	52	56.5	61	67	73
23					56.5	61.7	67	73.5	80
24					61	67	73	80	87

Form Class 72

Tree diameter (inches)	Gross cubic foot volume, inside bark								
	Number of 16-foot logs to 6-inch top								
	1	1½	2	2½	3	3½	4	4½	5
9	7.5	8.7	10						
10	8	9.5	11	12.5	14	16	18	21	24
11	9.5	11	12.5	14.5	16.5	18.7	21	24	27
12	11	12.5	14	16.5	19	21.5	24	27	30
13	12.5	14.5	16.5	19	21.5	24.2	27	30	33
14	14	16.5	19	21.5	24	27	30	33	36
15	16	18.5	21	23.7	26.5	29.5	32.5	36.5	40.5
16	18	20.5	23	26	29	32	35	40	45
17	20.5	23	26	29	32	36	40	44.5	49
18	23	26	29	32	35	40	45	49	53
19	26	29	32	35.7	39.5	44.5	49.5	53.7	58
20	29	32	35	39.5	44	49	54	58.5	63
21			40	44.5	49	54	59	64.5	70
22			45	49.5	54	59	64	70.5	77
23					59	64.7	70.5	77.5	84.5
24					64	70.5	77	84.5	92

Form Class 74
White spruce

Tree diameter (inches)	Gross cubic foot volume, inside bark								
	Number of 16-foot logs to 6-inch top								
	1	1½	2	2½	3	3½	4	4½	5
9	8	9	10						
10	9	10	11	13	15	17	19	22	25
11	10	11.5	13	15	17	19.5	22	25	28
12	11	13	15	17	19	22	25	28	31
13	13	15	17	19.5	22	25	28	31.2	34.5
14	15	17	19	22	25	28	31	34.5	38
15	17	19.2	21.5	24.5	27.5	30.7	34	38.2	42.5
16	19	21.5	24	27	30	33.5	37	42	47
17			27	30.2	33.5	37.7	42	47	52
18			30	33.5	37	42	47	52	57
19			33.5	37.5	41.5	46.7	52	57	62
20			37	41.5	46	51.5	57	62	67
21			42	46.7	51.5	57	62.5	68	73.5
22			47	52	57	62.5	68	74	80
23					62.5	68.2	74	81	88
24					68	74	80	88	96

Form Class 76

Tree diameter (inches)	Gross cubic foot volume, inside bark								
	Number of 16-foot logs to 6-inch top								
	1	1½	2	2½	3	3½	4	4½	5
9	8	9	10						
10	9	10	11	13	15	17.5	20	23	26
11	10	11.7	13.5	15.5	17.5	20.2	23	26	29
12	11	13.5	16	18	20	23	26	29	32
13	13.5	15.7	18	20.5	23	26	29	32.5	36
14	16	18	20	23	26	29	32	36	40
15	18	20.2	22.5	25	28.5	32	35.5	40	44.5
16	20	22.5	25	28	31	35	39	44	49
17	22.5	25.2	28	31.5	35	39.5	44	48.7	53.5
18	25	28	31	35	39	44	49	53.5	58
19	28	31.5	35	39.2	43.5	48.7	54	59	64
20	31	35	39	44.5	48	53.5	59	64.5	70
21			44	48.7	53.5	59.2	65	71	77
22			49	54	59	65	71	77.5	84
23					65	70.2	77.5	85	92.5
24					71	77.5	84	92.5	101

Tree diameter (inches)	Gross cubic foot volume, inside bark								
	Number of 16-foot logs to 6-inch top								
	1	1½	2	2½	3	3½	4	4½	5
9	9	9.5	10						
10	10	10.5	11	13.5	16	18.5	21	24	27
11	11	12.2	13.5	16	18.5	21.2	24	27.5	30.5
12	12	14	16	18.5	21	24	27	30.5	34
13	14	16.2	18.5	21.2	24	27.2	30.5	34	37.5
14	16	18.5	21	24	27	30.5	34	37.5	41
15	18	20.7	23.5	26.7	30	33.5	37	41.5	46
16	20	23	26	29.5	33	36.5	40	45.5	51
17	23	26.2	29.5	33	36.5	41	45.5	50.7	56
18	26	29.5	33	36.5	40	45.5	51	56	61
19	29.5	33	36.5	40.7	45	50.5	56	61.5	67
20	33	36.5	40	45	50	55.5	61	67	73
21			45.5	50.5	55.5	61	67.5	73.2	80
22			51	56	61	67.5	74	80.5	87
23					67.5	74	80.5	88.2	96
24					74	80.5	87	96	105

Form Class 80

Tree diameter (inches)	Gross cubic foot volume, inside bark								
	Number of 16-foot logs to 6-inch top								
	1	1½	2	2½	3	3½	4	4½	5
9	9	10	11						
10	10	11	12	14.5	17	19	21	24.5	28
11	11	12.7	14.5	17	19.5	22	24.5	28	31.5
12	12	14.5	17	19.5	22	25	28	31.5	35
13	14.5	17	19.5	22.2	25	28.2	31.5	35.5	39.5
14	17	19.5	22	25	28	31.5	35	39.5	44
15	19	21.7	24.5	27.7	31	35	39	43.7	48.5
16	21	24	27	30.5	34	38.5	43	48	53
17	24	27.2	30.5	34.5	38.5	43.2	48	53	58
18	27	30.5	34	38.5	43	48	53	58	63
19	30.5	34.5	38.5	43	47.5	53	58.5	64	69.5
20	34	38.5	43	47.5	52	58	64	70	76
21			48	53	58	64.2	70.5	77.2	84
22			53	58.5	64	70.5	77	84.5	92
23					70.5	77	84.5	92	100.5
24					77	84.5	92	100.5	109

Tree diameter (inches)	Gross cubic foot volume, inside bark								
	Number of 16-foot logs to 6-inch top								
	1	1½	2	2½	3	3½	4	4½	5
9	9	10	11						
10	10	11	12	14.5	17	19.5	22	25.5	29
11	12	13.5	15	17.5	20	22.7	25.5	29	32.5
12	14	16	18	20.5	23	26	29	32.5	36
13	16	18.2	20.5	23.2	26	29.2	32.5	36.7	41
14	18	20.5	23	26	29	32.5	36	41	46
15	20	23	26	29	32	36.2	40.5	45.5	50.5
16	22	25.5	29	32	35	40	45	50	55
17	25	28.5	32	37	40	45	50	55	60
18	28	31.5	35	40	45	50	55	60	65
19	31.5	35.7	40	44.7	49.5	55.2	61	66.5	72
20	35	40	45	49.5	54	60.5	67	73	79
21			50	55.2	60.5	67	73.5	80.2	87
22			55	61	67	73.5	80	87.5	95
23					73.5	81	87.5	95.7	104
24					80	87.5	95	104	113

Tree diameter (inches)	Gross cubic foot volume, inside bark								
	Number of 16-foot logs to 6-inch top								
	1	1½	2	2½	3	3½	4	4½	5
9	10	11.5	13						
10	11	12.5	14	16	18	20.5	23	26.5	30
11	12.5	14.2	16	18.5	21	23.7	26.5	30.2	34
12	14	16	18	21	24	27	30	34	38
13	16	18.5	21	24	27	30.5	34	38.2	42.5
14	18	21	24	27	30	34	38	43.5	47
15	20.5	23.2	27	30.2	33.5	37.7	42	47	52
16	23	26.5	30	33.5	37	41.5	46	51.5	57
17	25.5	29.5	33.5	37.5	41.5	46.5	51.5	57.2	63
18	28	32.5	37	41.5	46	51.5	57	63	69
19	32.5	37	41.5	46.2	51	57.2	63.5	69.5	75.5
20	37	41.5	46	51	56	63	70	76	82
21			51	57	63	69.7	76.5	83.5	90.5
22			56	63	70	76.5	83	91	99
23					76.5	83.7	91	99.7	108.5
24					83	91	99	108.5	118

Form Class 86
White spruce

Tree diameter (inches)	Gross cubic foot volume, inside bark								
	Number of 16-foot logs to 6-inch top								
	1	1½	2	2½	3	3½	4	4½	5
9	10	11.5	13						
10	11	12.5	14	16.5	19	21.5	24	27.5	31
11	13	14.7	16.5	19	21.5	24.5	27.5	31.2	35
12	15	17	19	21.5	24	27.5	31	35	39
13	17	19.2	21.5	24.5	27.5	31.2	35	39.5	44
14	19	21.5	24	27.5	31	35	39	44	49
15	21	24.2	27.5	31	34.5	39	43.5	48.2	54
16	23	27	31	34.5	38	43	48	53.5	59
17	26	30.2	34.5	38.7	43	48.2	53.5	59.2	65
18	29	34.5	38	43	48	53.5	59	65	71
19	33.5	38.2	43	48	53	59.2	65.5	71.7	78
20	38	43	48	53	58	65	72	78.5	85
21			53.5	59	65	72	79	86.5	94
22			59	65.5	72	79	86	94.5	103
23					79	86.7	94.5	103.7	113
24					86	94.5	103	113	123

Form Class 88

Tree diameter (inches)	Gross cubic foot volume, inside bark								
	Number of 16-foot logs to 6-inch top								
	1	1½	2	2½	3	3½	4	4½	5
9	10.5	12	13.5						
10	12	13.5	15	17	19	22	25	28.5	32
11	13.5	15.5	17.5	19.7	22	25.2	28.5	32.2	36
12	15	17.5	20	22.5	25	28.5	32	36	40
13	17	19.7	22.5	25.5	28.5	32.2	36	40.7	45.5
14	19	22	25	28.5	32	36	40	45.5	51
15	21.5	25	28.5	32	35.5	40.2	45	50.5	56
16	24	28	32	35.5	39	44.5	50	55.5	61
17	26.5	31	35.5	40	44.5	50	55.5	61	67.5
18	29	34	39	44.5	50	55.5	61	67.5	74
19	34.5	40.5	46.5	50.7	55	61.5	68	74.5	81
20	40	45	50	55	60	67.5	75	81.5	88
21			55.5	61.5	67.5	74.7	82	89.5	97
22			61	68	75	82	89	97.5	106
23					82	89.2	96.5	106.5	116.5
24					89	97.5	106	116.5	127

Tree diameter (inches)	Gross cubic foot volume, inside bark								
	Number of 16-foot logs to 6-inch top								
	1	1½	2	2½	3	3½	4	4½	5
9	11	12.5	14						
10	12	13.5	15	17.5	20	23	26	29.5	33
11	14	15.7	17.5	20.2	23	26.2	29.5	33.7	38
12	16	18	20	23	26	29.5	33	38	43
13	18	20.5	23	26.2	29.5	33.7	38	42.7	47.5
14	20	23	26	29.5	33	38	43	47.5	52
15	22.5	26	29.5	33.2	37	42	47	52.2	57.5
16	25	29	33	37	41	46	51	57	63
17	27.5	32.2	37	41.5	46	51.5	57	63.2	69.5
18	30	35.5	41	46	51	57	63	69.5	76
19	35.5	40.7	46	51.2	56.5	63.2	70	77	84
20	41	46	51	56.5	62	70.5	77	84.5	92
21			57	63.2	69.5	77.2	85	93	101
22			63	70	77	85	93	101.5	110
23					85	93.2	101.5	111	120.5
24					93	101.5	110	120.5	131